PRINCETON ACM / IEEE COMPUTER SOCIETY CHAPTERS
MAY 2004 DINNER MEETING

The Architectural Evolution of Computers

George Trimble

From "walk-in" computers to "walk-around" computers to "where's the computer?" there have been obvious drastic changes in a computer's size and appearance. Hardware technology has significantly affected their size and speed (relays to vacuum tubes to integrated circuits to micro-circuits.) Less obvious, but equally drastic, have been the changes in their architecture that have resulted in greatly improved speed and efficiency. Their architecture has evolved through many stages with electronics being used increasingly to perform various functions. The ENIAC – Electronic Numerical Integrator and Computer – has been billed as "the world's first electronic digital computer." However, it was not the first computer to utilize electronics, nor was it even a computer in the modern sense of the word. It was the last and largest of a series of "calculators."

A major architectural breakthrough occurred with the concept of "stored-programming," which is the basis of all modern computers. We shall clarify the architectural distinction between "calculators" and "computers," tracing the transition from electro-mechanical calculators through the incorporation and expansion of electronics into their design, culminating in the ENIAC – the last electronic calculator. We will look at changes in the architecture of stored program computers and follow this evolution, describing some of the major architectural developments and how each increased the power and efficiency of computers.

George Trimble received his BA from St. John's College, Annapolis, MD, 1948 and MA in Mathematics from the University of Delaware, 1951. He joined the Computing Laboratory at Aberdeen Proving Grounds, MD, in 1949 and worked on the ENIAC, EDVAC, ORDVAC, Bell Relay Calculators, and IBM Relay Calculators. In 1952 he joined IBM in their research laboratories in Endicott, NY and contributed to the design of many of their early computers, including the 650 and 700 series machines.

After three years he joined Computer Usage Company, the world's first software company, in New York, where he became Corporate Technical Director, although "Director of Odd-Ball Applications" would be more descriptive. Occasionally he commuted to the Princeton Junction train station on a Triumph motorcycle while wearing a white Homberg. Thirteen years later he joined Penta Computer Associates as V.P. of R&D. In 1971 he formed T-Logic and works as an independent consultant. He has conducted 175 seminars on various computer subjects in the US, Canada, Europe, and South America and given many talks at technical society meetings. He is currently writing a book on the history and evolution of computers from an architectural viewpoint. Some interesting history information can be found on his web site: http://mywebpages.comcast.net/georgetrimble.

Date: Thursday, May 20, 2004. 6:00 PM cash bar, 7:00 PM dinner, 8:00 PM presentation
Place: Good Time Charley's Restaurant, Route 27, Kingston, NJ. Ask for the "ACM Group".
Information: Dennis Mancl (908) 582-7086, Jim Matey (609) 734-2868
On-line info: **http://www.acm.org/chapters/princetonacm**

ADVANCE RESERVATION REQUIRED – please fill out and return the form below:

Name: _____ Phone number: _____

Menu choice: _____ Charley's Special Steak _____ Salmon Chadwick _____ Chicken Cordon Bleu

Dinner includes hot hors d'oeuvres, salad, baked potato, vegetable, house dessert, and coffee/tea. Send your check for $20 per person and this form to: PRINCETON CHAPTER OF ACM, Treasurer, PO Box 1324, Princeton NJ 08542